

In the Claims

The following is an amendment to and a complete listing of claims which replaces all prior versions, and listings, of claims in this application.

1. (currently amended) A multi-axis robot comprising an arm ~~[[A]]~~ for moving a tool ~~[(0)]~~ in space and actuated by electric motors ~~[(10)]~~, and a control system ~~comprising~~ including:

At least one digital interface having at least one position sensor associated with the arm and being adapted for serializing an output signal therefrom;
At least one power module for supplying power to the motors;

~~[[- a]] A control unit associated with controller @ which includes at least one power module (22) for supplying said power to the motors (10) and at least one calculation and processing unit ~~[(26)]~~ used in particular to compute~~
~~[[the]] a path of the arm (A) and generate control signals for [[said]] the at least one power module modules, and the at least one calculation and processing unit;~~

~~-link means (52, B)~~

Link means between [[said]] the arm, [[said]] the at least one power module and said , the control unit and the at least one digital interface, permitting at least the control of the motors and the transmission of feedback signals from the arm; and used at least to supply said motors from said module, characterized-
~~in that said link means (52, B) comprise a set of one or more structural buses (B₁, B₂) linking a control unit (30) associated with said calculation and processing unit (26), on the one hand, to said module (22) and, on the other~~

~~hand, to at least one digital interface (14) with at least one position sensor (12) on said arm (A) , and in that this assembly forms a~~

A single functional bus (B) enabling [[said]] the at least one power module to be controlled by [[said]] the at least one calculation and processing unit and feedback signals to be transmitted from [[said]] the arm to [[said]] the control unit and/or [[said]] the at least one power module, at [[the]] a frequency of the single functional bus, and the single functional bus being formed by at least one structural bus and the functional bus linking the control unit to the at least one power module and the at least one digital interface.

2.(currently amended) The robot as claimed in claim 1,
~~characterized in that said wherein the~~ single functional bus (B)
~~is divided into~~ includes at least two structural buses (B₁, B₂):
~~linking, for the first, said control unit (30) to said module (22) and, for the second (B₂) or subsequent buses, said control unit (30) to said interface (14)~~

A first structural bus linking the control unit to the at least one power module; and

A second structural bus linking the control unit to the at least one digital interface.

3.(currently amended) The robot as claimed in claim 2,
~~characterized in that said wherein the~~ first structural bus is a
metallic bus (B₁), ~~particularly~~ made of copper.

4.(currently amended) The robot as claimed in claim 1,
~~characterized in that said wherein the~~ second structural bus ~~or one of said other buses~~ is an optical fiber bus (B₂).

5.(currently amended) The robot as claimed in claim 1,
~~characterized in that said~~ wherein the control unit ~~[[30]]~~ is
linked to ~~[[said]]~~ the at least one calculation and processing
unit ~~[[26]]~~ by a PCI type bus ~~[[28]]~~.

6.(currently amended) The robot as claimed in claim 1,
~~characterized in that said~~ wherein the control unit ~~[[30]]~~ is
incorporated in ~~[[said]]~~ the at least one calculation and
processing unit ~~[[26]]~~.

7.(currently amended) The robot as claimed in claim 1,
~~characterized in that it comprises~~ including an identification
and calibration card ~~[[16]]~~ incorporated in ~~[[said]]~~ the
functional bus (B).

8.(currently amended) The robot as claimed in claim ~~[[2,]]~~ 1
~~characterized in that the or~~ wherein each structural bus ~~(B₁, B₂)~~
is designed to be extended by additional connection means ~~(B₁,
B₂)~~ to interact with at least one external unit ~~(12', 12'', 14',
14'', 22')~~ for processing information.

9.(currently amended) The robot as claimed in claim 1,
~~characterized in that said~~ wherein the link means also ~~comprise~~
includes a power conductor ~~[[52]]~~ linking ~~[[said]]~~ the at least
one module ~~or modules (22)~~ to ~~[[said]]~~ the arm (A), independently
of ~~[[said]]~~ the functional bus (B).

10.(currently amended) The robot as claimed in claim 2,
~~characterized in that said~~ wherein the first structural bus (B₁)
is connected ~~directly or indirectly~~ to a plurality of power
modules ~~[[22]]~~, each dedicated to a separator motor of ~~[[said]]~~
the robot ~~[[®]]~~.

11.(currently amended) The robot as claimed in claim 1,
~~characterized in that said the at least one digital~~ interface is
an interface card ~~[[(14)]]~~ for computing the speed and/or the
acceleration of the movement measured by ~~the or each~~ an
associated sensor ~~[[(12)]]~~, serializing its output signal and,
~~where appropriate,~~ digitizing the output signals of ~~the~~
associated ~~[[said]]~~ sensor ~~or sensors~~ when they are analog.

12.(currently amended) The robot as claimed in claim 1,
~~characterized in that said the at least one digital~~ interface is
incorporated in ~~[[the]]~~ an associated sensor and is for computing
~~[[the]]~~ a speed and ~~[[the]]~~ an acceleration of the movement
measured by ~~[[said]]~~ the associated sensor, serializing its
output signal and, ~~where appropriate,~~ digitizing the output
signal of ~~[[said]]~~ the associated sensor when it is analog.

13.(currently amended) The robot as claimed in claim 1,
~~characterized in that said the at least one digital~~ interface is
incorporated in ~~[[said]]~~ the arm ~~or placed at the foot of the~~
arm.